UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,979	10/01/2003	Limin Li	5398-001-27	6296

22506 7590 09/12/2007

JAGTIANI + GUTTAG
10363-A DEMOCRACY LANE
FAIRFAX, VA 22030

EXAMINER	
PENG, BO	

ART UNIT	PAPER NUMBER
1648	

MAIL DATE	DELIVERY MODE
09/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/675,979	LI, LIMIN	
	Examiner	Art Unit	
	Bo Peng	1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 June 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22 and 24-50* is/are pending in the application.

4a) Of the above claim(s) *1-19 and 27-50* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *20-22&24-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is in response to the amendment filed June 15, 2007. Claim 23 is cancelled. Claims 20 and 25 are amended.

2. Accordingly, Claims 1-22 and 25-50 are pending. Claims 1-19 and 27-50 are withdrawn as non-elected. Claims 20-22 and 24-26 are under consideration in this Office action.

Claim Rejections - 35 USC § 112, first paragraph

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. The rejection of Claims 20-22 and 24-26 under 35 U.S.C. 112, first paragraph for failing to comply with the enablement requirement **is maintained** for the reason of record.

5. Applicant argues that the claims are directed to treatment of viral infection. They do not call for prevention; they do not call for eradication. Applicant argues that a human infected with HIV would regard a 70% retardation of viral particle production as a useful result. Better results are described, and even better efficiency can be achieved through routine testing and selection.

6. In response to Applicant's argument, Applicant has shown some anti-TSG101 antibodies inhibit 40-70% MLV, HIV or Ebola "duding" from cells in artificial or surrogate *in vitro* assays (Examples), but has not shown that anti-TSG101 antibodies can effectively block viral production either *in vitro* or *in vivo*. Those of skill in the art recognize that artificial or surrogate *in vitro* assays are generally useful to observe basic cellular phenomenon, such as virus

"budding". However, the correlation of the physiological condition *in vivo* is generally lacking because cells used such artificial or surrogate *in vitro* assays cannot support the full replication cycle of viruses, such as HIV infection in 293 cells. The specification has not provided any evidence that anti-TSG101 antibodies can effectively inhibit virus infection by competing with the rate of virus replication. Thus, those of skill in the art recognize that inhibition of 40-70% MLV, HIV or Ebola in artificial or surrogate *in vitro* assays is not necessarily translated to 70% retardation of viral particle production *in vivo*, as Applicant asserted, or to clinical benefit. As discussed in the previous office action, in view of the empirical and unpredictable nature of the art of virology, and lack of guidance and working examples with respect to inhibition of viruses *in vivo* using anti-TSG101 antibody, one skilled in the art would have to do an **undue** amount of experimentation to use the claimed invention.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that forms the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. The rejection of Claims 20-22 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Zavitz (US2004/0109861A), **is withdrawn** in view of Applicant's amendment.

9. Applicant argues that Zavitz is not prior art because the instant application is entitled to an effective filing date of 2002.

10. In response to Applicant argument, Zavitz (US2004/0109861A) is a proper prior art to the instant application because the effective filing date of Zavitz is March 14, 2001, the filing date of provisional application 60/276,259, which has full support for antibody therapy using anti-TSG101.

11. Following is new rejection necessitated by Applicant's amendment:

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 20-22, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zavitz (US2004/0109861A, effective filing date March 14, 2001).

14. Claims 20-22, 24 and 25 are directed to a method for treating infection by an enveloped virus in a mammal, comprising administering to said mammal a therapeutically effective amount of an antibody, wherein said antibody binds a TSG101 protein, whereby said enveloped virus infection is treated, wherein said antibody binds the N-terminal or C-terminal region of said TSG101 protein, wherein said enveloped virus is selected from the group consisting of human

immunodeficiency virus type I (HIV-I), human immunodeficiency virus type II (HIV-II), Marburg virus, and Ebola virus, wherein said antibody is a monoclonal antibody, wherein the method of Claim 20, further comprises administering to said mammal a therapeutically effective amount of one or more other therapeutic agents.

15. Zavitz teaches a method of treating HIV infection comprising administering antibodies to cells or tissue *in vitro* or in a patient (see Paragraph [0241] and [0242]). The antibody administered may be immunoreactive with Tsg101 or HIV GAG or GAGp6. Suitable antibodies may be monoclonal or polyclonal, or single-chain antibodies. Zavitz teaches that an antibody specific to the UEV domain of Tsg101 is administered to cells or tissue *in vitro* or in a patient. Zavitz teaches that N-terminal Tsg101 contains UEV domain, including approximately amino acid residues 2 to 145.

16. Zavitz does not explicitly teach the antibody binds an epitope in a region selected from the group consisting of VRETVNVITLYKDLKPVL (SEQ ID NO: 2), which is located in amino acid 22-40 of N-terminal of Tsg101, and QLRALMQKARKTAGLSDLY (SEQ ID NO: 3), which is located at C-terminal of Tsg101.

17. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a anti-HSG101 antibody, which binds to N-terminal of Tsg101, or an epitope VRETVNVITLYKDLKPVL (SEQ ID NO: 2), for blocking interaction of Tsg 101 and viral proteins as taught by Zavitz. The skilled artisan would have been motivated to do so and have a reasonable expectation of success, given the knowledge that N-terminal Tsg101 contains UEV domain, including approximately amino acid residues 2 to 145 is responsible for interaction between Tsg101 and viruses, which includes the epitope VRETVNVITLYKDLKPVL (SEQ ID

NO: 2), as taught by Zavitz. Thus, the invention as a whole was clearly *prima facie* obvious to one of ordinary skill in the art at the time the invention was made.

Remarks

18. No claims are allowed.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bo Peng, Ph.D. whose telephone number is 571-272-5542. The examiner can normally be reached on M-F, 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bruce Campell, Ph. D. can be reached on 571-272-0974. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

BP
Bo Peng, Ph.D.
August 30, 2007

Bruce Campell

BRUCE R. CAMPELL, PH.D
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600